APPENDIX III:

TEST REPORT:

Example 2A:

The procedure of Example 2 on page 7 of the application was repeated with the difference that the blowing agent-containing polystyrene melt (*6%by weight of n-pentane*) was conveyed at a throughput of 110 kg/h (*instead of 100 kg/h*) through a die-plate having 300 holes (*diameter at the die exit (D) 0.4 mm*). The melt temperature was 200°C, and the die-plate temperature was 220°C.

The expandable polystyrene granules obtained in this manner had a uniform granule diameter of 0.65 mm. The molecular weight M_w of the expandable polystyrene was 241'000 g/mol.

The granules were prefoamed to a density of 15 g/l. The cell number of the prefoamed granules was 4.4 cells/mm.

Determination of demolding time, shrinkage and surface structure

The expandable polystyrene granules obtained according to Example 2 and Example 2A were prefoamed to foam particles having a density of 15 g/l using steam. After 12 hours storage the foam particles were welded in a commercial mold (0.5 m × 1 m × 2 m) using steam blast at 0.6 bar pressure (*1.6 bar absolute*). The time until the pressure dropped to 0.05 bar (*1.05 bar absolute*) was measured and is indicated as demolding time.

A short demolding time is preferable because it allows a higher throughput and, thus, a more economic processing.

After 24 hours storage at room temperature (23°C) the foam moldings were cut into plates of 100 cm × 50 cm × 5 cm dimension. Shrinkage of the plates began immediately after cutting, and this time was defined as "zero."

After cutting, the plates were stored for 28 days at room temperature (23°C). The change of the length of the plates was measured with an accuracy of 0.01 mm and was noted as shrinkage in percent.

A low percentage in shrinkage is preferable and an important property of the foam molding. A high degree of shrinkage of the plates can lead to damages in building insulation such as cracking in the plaster. Preferably, the percentage of shrinkage should be below 0.2%.

The surface structure of the plates was determined visually. Generally, a matt surface of a foam plate indicates that coarse-celled foam particles were welded, whereas a glossy surface indicates fine-celled foam particles were welded.

The data pertaining to die-plate temperature, granule diameter, throughput, demolding time, shrinkage and surface structure are compiled in the following table:

Die-Plate Temperature [°C]	Granule Diameter [mm]	Throughput [kg/h]	Demolding Time [sec]	Shrinkage [%]	Surface Structure
180	0.80	100			uneven, matt
200	0.65	100	89	0.23	uneven, matt
220	0.60	100	65	0.18	even
240	0.55	100	61	0.14	even
220	0.65	110	71	0.185	even

The granules obtained in the experiments in which the temperature of die-plate was the same as, or below, the temperature of the blowing agent-containing polymer melt yielded plates having an uneven, matt surface due to a different cell structure and incomplete welding of the foam particles. Additionally, the demolding time and the shrinkage of the plates produced from the granules obtained in the experiment in which the temperature of die-plate was the same as the temperature of the blowing agent-containing polymer melt was significantly higher than the demolding time and shrinkage observed when granules were employed which had been obtained in experiments in which the die-plate temperature was higher than the temperature of the blowing agent-containing polymer melt.